DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A4SW
Rev. No. 23
Ayres Corporation
600 S2D, 600 S2R-T15, 600 S2R,
600 S2R-R3S, 600 S2R-R1340,
600 S2R-T11, 600 S2R-R1820,
600 S2R-T45, 600 S2R-T65,
600 S2R-G6, 600 S2RHG-T65,
600 S2R-G10, 600 S2R-T34,
600 S2R-G5, 600 S2RHG-T34,
600 S2R-G1, 600 S2R-T660
April 10, 2000

TYPE CERTIFICATE DATA SHEET NO. A4SW

This data sheet which is a part of Type Certificate No. A4SW, prescribes conditions and limitations under which the product, for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations (See Note 4).

Type Certificate Holder: Ayres Corporation
P.O. Box 3090
Albany, Georgia 31706-3090

I-Model 600 S2D 1 PCLM (Restricted Category Only), Approved November 1, 1965

Engine: Pratt & Whitney WASP R-1340-AN-1 (S3H1 Commercial designation) with carburetor parts list settings 395118-3 or A-18639-7

Fuel: 80/87 minimum grade aviation gasoline

Engine Limits

	H.P.	R.P.M.	M.P. IN. H.G.	ALT.
Takeoff	600	2250	36.0	S.L.
Max. Continuous	550	2200	34.0	S.L.
Max. Continuous	550	2200	32.5	5000

Propeller and Propeller Limits: Hamilton Standard, constant speed, 12D40 Hub, 6101-12 blades.
Diameter 109 inches maximum, 107 inches minimum.
Pitch settings, 11.5^{o} low and 27.0^{o} high at 42 inch station.
Alternate settings, 11.5^{o} low and 21.5^{o} high at 42 inch station.
Alternate blades, EAC AG100-2, settings 11.5^{o} low and 18^{o} high at 42 inches.

Airspeed Limits (CAS) (See Note 2(n) for exceptions)

Vne (Never Exceed)	159 m.p.h. (138 knots)
Vp (Maneuvering)	126 m.p.h. (109 knots)
Vno (Max. Structural Cruising)	126 m.p.h. (109 knots)

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C.G. Range	(+22.5) to (+29.0)
Maximum Weight	6000 lbs.
Number of Seats	1 (+89.0)
Maximum Cargo Load	See weight and balance data
Fuel Capacity	109 gallons (+38.5) (100 gallon usable capacity, one 54.5 gallon tank in each wing, tanks interconnected). See NOTE 1 for data on unusable fuel.
Oil Capacity	11.4 gallons total. 84 lb. at (-13.6) (9 gallons usable).

Control Surface Movements		
Elevator	Up 27^{o}	Down 17^{o}
Elevator Tab	Up 12^{o}	Down 18^{o}
Rudder	Left 24^{o}	Right 24^{o}
Aileron	Up 21^{o}	Down 17^{o}

Serial Numbers Eligible: 600-1311D and subsequent

Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. In addition, the following equipment is required:

(a) FAA approved flight manual, dated November 1, 1965.

(b) Operative pre-stall warning system per Snow Dwg. No. 90096.

Either or both of the following items may be installed as customer optional equipment:

(a) Canopy installation, Snow Dwg. No. 10131.

(b) 12 or 24 volt electrical system, Snow Dwg. No. 90111.

Agricultural Dispersal Equipment: Any one of the ten following agricultural dispersal systems may be installed:

(a) 2" External Spray Installation, Snow Dwg. No. 80185.
(b) 1-1/4" Internal Spray Installation, Snow Dwg. No. 80186.
(c) Small Swathmaster Dispersal Installation, Snow Dwg. No. 80187 (See NOTE 2(n)).
(d) Snow Spreader Dispersal Installation, Snow Dwg. No. 80188 (See NOTE 2(n)).
(e) Quick Disconnect Flange and Snow Spreader Installation, Snow Dwg. No. 80609.
(f) Large Swathmaster Installation - Standard of Swedish Gates, Snow Dwg. No. 80610.
(g) Large Swathmaster Installation - 6 inch Adapter Box, Snow Dwg. No. 80602.
(h) Spray System Installation - Fire Bomber Hopper with Cast Door, Snow Dwg. No. 80602.
(i) Cable Dump System - Swedish Gate, Snow Dwg. No. 80251.
(j) Fire Bomber Installation and Hopper Modification, Snow Dwg. No. 5-8062, Rev. D.

II-Model S-2R, 1 PCLM (Restricted Category Only), Approved March 21, 1968

Engine

Pratt & Whitney WASP R-1340-AN-1 (S3H1 or S1H1 Commercial designation) with carburetor parts list settings 395118-3 or A-18639-7. Manifold pressure gage is to be modified per Drawing 60600 when the S1H1 engine is used. (See NOTE 5 for optional engine installation)

Fuel

80/87 minimum grade aviation gasoline

Engine Limits

	H.P.	R.P.M.	S3H1 M.P. In. H.G.	ALT.	S1H1 M.P. In. H.G.	ALT.
Takeoff (5 min.)	600	2250	36.0	S.L.	36.5	S.L.
Max. Continuous	550	2200	34.0	S.L.	35.0	S.L.
Max. Continuous	550	2200	32.5	5000	33.0	8000

Propeller and Propeller Limits

Hamilton Standard, constant speed, 12 D40 hub, 6101-12 blades.
Diameter 109 inches maximum, 107 inches minimum. Pitch settings 11.5^{o} low and 27.0^{o} high at 42 inch station. Alternate settings, 11.5^{o} low and 21.5^{o} high at 42 inch station.
Alternate blades, EAC AG100-2 - Diameter 106 inches (2 percent cutoff permitted). Pitch setting, 11.5^{o} low and 20^{o} high at 42 inches.

Airspeed Limits (CAS) (See Notes 2(o), 2(p) and 2(q) for exceptions)

Vne (Never Exceed)	159 m.p.h. (138 knots)
Vp (Maneuvering)	126 m.p.h. (109 knots)
Vno (Max. Structural Cruising)	126 m.p.h. (109 knots)
Vfe (Flap Extended)	123 m.p.h. (107 knots)

C.G. Range

(+22.5) to (+30.0)

Maximum Weight

6000 lbs.

Number of Seats

1 (+89.0)

Maximum Cargo Load

See weight and balance data. Maximum baggage compartment, 60 lbs. (+112). Maximum hopper load, 3336 lbs. (+29.9).

Fuel Capacity

S/N 1380R - 70 gallons (38.5) (66 gallons usable capacity, one 35 gallon tank in each wing, tanks interconnected).
S/N 1416R and subsequent - 106 gallons (38.5).
S/N 1416R thru 1418R - (100 gallon usable capacity, one 53 gallon tank in each wing, tanks interconnected).
S/N 1419R thru 1499R and subsequent and S/N 1501R thru 1510R - (98 gallon usable, one 53 gallon tank in each wing, tanks interconnected).
S/N 1500R, 1511R and subsequent - (104 gallon usable, one 53 gallon tank in each wing, tanks interconnected).
See NOTE 1 for data on unusable fuel. Also see NOTE 9.

Oil Capacity

11.4 gallons total (84 lbs. at -13.6) (9 gallons usable).

Control Surface Movements

Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
Elevator Tab	Up $13^{o} \pm 1^{o}$	Down $18^{o} \pm 1^{o}$
Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
Flaps		Down 26^{o} - 30^{o}

Serial Numbers Eligible

1380R, 1416R thru 4999R

Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. In addition, the following equipment is required:

(a) Airplane Flight Manual, dated February 27. 1979, and Supplement for Restricted Category Operation, dated February 27, 1979. (Only required for S/N 2526 and up).

(b) 24 volt electrical system, Rockwell Drawing 90159. (24 volt system includes required wing night lights), effective S/N 1380R, 1416R thru 1590R.

(c) 24 volt electrical system, Rockwell Drawing 90326, effective S/N 1591R and subsequent.

(d) Operative pre-stall warning system per Rockwell Drawing 90095, S/N 1416R thru 1440R.

Agricultural Dispersal Equipment

Any one of the ten following agricultural dispersal systems may be installed with the R1340 engines, or with the optional Wright R-1300-1B engine installation:

(a) 2" External Spray Installation, Aero Commander Dwg. No. 80680, S/N 1416R thru 1510R.

(b) Spreader and Calibration Installation, Aero Commander Dwg. No. 80674, S/N 1416R and subsequent.

(c) Fire Bomber Dump System Installation, Aero Commander Dwg. No. 80792 (See NOTE 2(o)), S/N 1416R thru 1576R.

(d) Micronair Spray System, Aero Commander Dwg. No. 80870 (See NOTE 2(q)), S/N 1416R and subsequent.

(e) 2" Low Drag Spray System, Aero Commander Dwg. No. 81012, S/N 1511R thru 1620R.

(f) Boommaster Installation, Aero Commander Dwg. No. 80931, S/N 1416R and subsequent.

(g) Standard Spray System, Rockwell Dwg. No. 81071, S/N 1621R and subsequent.

(h) Spreader and Spreader Quick-Disconnect Installation, Rockwell Dwg. No. 80975, S/N 1416R and subsequent.

(i) Large Swathmaster - Small Gate Installation, Rockwell Dwg. No. 80815, S/N 1416R thru 2068R.

(j) Swathmaster Installation, Rockwell Dwg. No. 81061, S/N 1416R thru 2068R.

(k) 2" Spray System Installation, Rockwell Dwg. No. 80852, S/N 1511R thru 1620R.

(l) Spray System Installation, Rockwell Dwg. No. 80854, S/N 1511R and subsequent.

(m) Fire Bomber System Installation, Rockwell Dwg. No. 81069, S/N 1577R and subsequent.

III-Model S2R-T34, 1 PCLM (Restricted Category Only), Approved April 28, 1977
See Notes 8, 18 and 19.

Engine

United Aircraft of Canada PT6A-34AG
Optional Engines: United Aircraft of Canada PT6A-34
(See NOTE 12)
United Aircraft of Canada PT6A-36 (Dry Configuration Only)
United Aircraft of Canada PT6A-41, PT6A-41AG, nd PT6A-42 (See NOTE 14)

Fuel

Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1D or 2D in accordance with ACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.) Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above:
+20°F for Grade No. 1D
+40°F for Grade No. 2D

Oil

UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Reverse	Idle
SHP	750			
Torque (PSI) (2 sec.)	64.5	68.4 Trans	64.5	
ITT (°C)	790	1090 Start (2 sec.)	790	
Ng (%)	101.5	102.6 Trans (2 sec.)	101.5	
Np (RPM)	2200	2420 Trans (2 sec.)	2100	
Oil Press (PSIG)	85 to 100	85 to 100	85 to 100	40 min.
Oil Temp (°C)	10 to 99	-40 min. 99 5 min.	0 to 99	-40 to 99

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

Propeller and Propeller Limits

Hartzell Hub Model HC-B3TN-3C (or HC-B3TN-3D) with Blade Model T-10282, Diameter 102.5 inches maximum, 92.5 inches minimum or optional Blade Model T-10282(N)+4, Diameter 106 inches maximum, 98 inches minimum.

Airspeed Limits (CAS)

Vne (Never Exceed)	159 mph (138 knots)
Vp (Maneuvering)	126 mph (109 knots)
Vno (Max. Structural Cruising)	126 mph (109 knots)
Vfe (Flap Extended)	123 mph (107 knots)

C. G. Range

Forward limit at 6,000 lbs., +26.5 inches aft of (see Note 8) datum.
Forward limit at 4,000 lbs., and below +24.0 inches aft of datum.
(Straight line variation in the forward limit between 4,000 and 6,000 lbs.)
Aft limit +30.0 inches aft of datum.
Datum is the leading edge of the wing.

Maximum Weight

6,000 lbs.

Maximum Operating Altitude

12,000 feet

Number of Seats (see Note 8)	1 (+89)		
Maximum Cargo Load	See weight and balance data. Maximum baggage compartment, 60 lbs. (+112). (See NOTE 8). Maximum hopper load, 3336 lbs. (+29.9). (See NOTE 10).		
Fuel Capacity	104 gallons usable, one 53 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel. Also see NOTE 9.		
Oil Tank Capacity	11 quarts - usable oil tank capacity 6 quarts.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $13^{o} \pm 1^{o}$	Down $18^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible (see Note 8)	6000 - 6049 T34-001 and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved June 23, 1978, and Supplement for Restricted Category Operation approved June 23, 1978, or later approved versions.		
Agricultural Dispersal	See NOTE 17. CAUTION: For operation with the Micronair Spray Equipment System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.		

IV-Model S2R-T15, 1 PCLM (Restricted Category Only), Approved April 3, 1979
See Notes 8, 18 and 19.

Engine	United Aircraft of Canada PT6A-15AG or PT6A-27 Due to anticipated operating environment, servicing and overhaul interval for both the PT6A-15AG and PT6A-27 engines shall be in accordance with Pratt & Whitney's recommendations for the PT6A-15AG engine.
Fuel	Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1D or 2D in accordance with UACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.) Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above: $+20^{o}$F for Grade No. 1D $+40^{o}$F for Grade No. 2D
Oil	UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Reverse	Idle
SHP	680			
Torque (PSI) (2 sec.)	53.0	53.0 Trans	53.0	
ITT (^{O}C)	725	1090 Start (2 sec.)	725	
Ng (%)	101.5	102.7 Trans (10 sec.)	101.5	
Np (RPM)	2200	2420 Trans (10 sec.)	2100	
Oil Press (PSIG)	80 to 100	80 to 100	80 to 100	40 min.
Oil Temp (^{O}C)	10 to 99	-40 min. 99 5 min.	0 to 99	-40 to 99

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

Propeller and Propeller Limits

Hartzell Hub Model HC-B3TN-3C (or HC-B3TN-3D) with Blade Model T-10282, Diameter 102.5 inches maximum, 92.5 inches minimum or optional Blade Model T-10282(N)+4, Diameter 106 inches maximum, 98 inches minimum.

Airspeed Limits (CAS)

Vne (Never Exceed)	159 mph (138 knots)
Vp (Maneuvering)	126 mph (109 knots)
Vno (Max. Structural Cruising)	126 mph (109 knots)
Vfe (Flap Extended)	123 mph (107 knots)

C. G. Range

Forward limit at 6,000 lbs., +26.5 inches aft of (see Note 8) datum.
Forward limit at 4,000 lbs. and below, +24.0 inches aft of datum.
(Straight line variation in the forward limit between 4,000 and 6,000 lbs.)
Aft limit +30.0 inches aft of datum.
Datum is the leading edge of the wing.

Maximum Weight

6,000 lbs.

Maximum Operating Altitude

12,000 feet

Number of Seats (see Note 8)

1 (+89)

Maximum Cargo Load

See weight and balance data.
Maximum baggage compartment, 60 lbs. (+112).
(See NOTE 8).
Maximum hopper load, 3336 lbs. (+29.9).
(See NOTE 10).

Fuel Capacity

104 gallons usable, one 53 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel. Also see NOTE 9.

Oil Tank Capacity

11 quarts - usable oil tank capacity 6 quarts.

Control Surface Movements

Elevator	Up $27^{O} \pm 1^{O}$	Down $17^{O} \pm 1^{O}$
Elevator Tab	Up $13^{O} \pm 1^{O}$	Down $18^{O} \pm 1^{O}$
Rudder	Left $24^{O} \pm 1^{O}$	Right $24^{O} \pm 1^{O}$
Aileron	Up $21^{O} \pm 1^{O}$	Down $17^{O} \pm 1^{O}$
Flaps		Down $15^{O} \pm 1^{O}$

Serial Numbers Eligible (see Note 8)	T15-001 and subsequent
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved April 3, 1979, and Supplement for Restricted Category Operation approved April 3, 1979, or later approved versions.
Agricultural Dispersal	See NOTE 17. CAUTION: For operation with the Micronair Spray Equipment System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.

V-Model S2R-R3S, 1 PCLM (Restricted Category Only), Approved August 1, 1979
See Note 8.

Engine	Wsk - "Pezetel" PZL-3S
Fuel	100/130 Minimum grade aviation gasoline
Oil	Aeroshell 100 or equivalent

Engine Limits

	H.P.	R.P.M.	M.P. IN. H.G.	ALT.
Takeoff (1 min.)	592	2200	37.0	S.L.
Max. Continuous	594	2050	36.2	S.L.

Propeller and Propeller Limits	One Dowty Rotol, Ltd., Model (C) R. 289/3-110-F/1, Constant Speed, Hydraulic, Non-Feathering, Non-Reversing Pitch Control with Pezetel Governor 0719-812008. Blade Model 660705200, Diameter: 102" ± 0.0 Pitch Setting at 7 Blade Radius Low $12^{o} \pm 1/4^{o}$; High $20^{o} \pm 1/4^{o}$.
or	
	One WSK Model US-132000/A Hub, US-132500 Blades, Diamter 103.15 inches maximum, 102.0 minimum, low pitch setting 12^{o} at 37 inch blade radius.

Airspeed Limits (CAS)	Vne (Never Exceed)	159 mph (138 knots)
	Vp (Maneuvering)	126 mph (109 knots)
	Vno (Max. Structural cruising)	126 mph (109 knots)
	Vfe (Flap Extended)	123 mph (107 knots)

C. G. Range (see Note 8)	(+22.5) to (+27.5)
Maximum Weight	6,000 lbs.
Number of Seats (see Note 8)	1 (+89)
Maximum Cargo Load	See weight and balance data. Maximum baggage compartment, 60 lbs. (+112). (See NOTE 8). Maximum hopper load, 3336 lbs. (+29.9).

Fuel Capacity	S/N R3S-001 and subsequent - (104 gallons usable, one 53 gallon tank in each wing, tanks interconnected). See NOTE 1 for data on unusable fuel.		
Oil Tank Capacity	11.4 gallons total (84 lbs. at -13.6) (9.0 gallons usable).		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $13^{o} \pm 1^{o}$	Down $18^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down 26^{o} - 30^{o}
Serial Numbers Eligible (see Note 8)	R3S-001 and subsequent		
Required Equipment	The basic required equipment as prescribed in the pplicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include a current Airplane Flight Manual and Supplement.		
Agricultural Dispersal Equipment	See NOTE 17		

VI-Model S2R-T11, 1 PCLM (Restricted Category Only), Approved October 26, 1979
See Notes 8, 18 and 19.

Engine	United Aircraft of Canada PT6A-11AG
Fuel	Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1D or 2D in accordance with UACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.) Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above: $+20^{o}$F for Grade No. 1D $+40^{o}$F for Grade No. 2D
Oil	UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Reverse	Idle
SHP	500			
Torque (PSI)	38.6	48.5 Trans (2 sec.)	38.6	
ITT (^{o}C)	700	1090 Start (2 sec.)	700	
Ng (%)	101.5	102.6 Trans (10 sec.)	101.5	
Np (RPM)	2200	2420 Trans (10 sec.)	2068	
Oil Press (PSIG)	80 to 100	80 to 100	80 to 100	40 min.
Oil Temp (^{o}C)	10 to 99	-40 min.	0 to 99	-40 to 99

The ratings shown on the United Aircraft of Canada PT6A-15AG engine are based on the static sea level standard condition with no external accessory loads and no air bleed.

Propeller and Propeller Limits	Hartzell Hub Model HC-B3TN-3C (or HC-B3TN-3D) with Blade Model T-10282, Diameter 102.5 inches maximum, 92.5 inches minimum or optional Blade Model T-10282(N)+4, Diameter 106 inches maximum, 98 inches minimum.		
Airspeed Limits (CAS)	Vne (Never Exceed)	159 mph (138 knots)	
	Vp (Maneuvering)	126 mph (109 knots)	
	Vno (Max. Structural Cruising)	126 mph (109 knots)	
	Vfe (Flap Extended)	123 mph (107 knots)	
C. G. Range	Forward limit at 6,000 lbs., +26.5 inches aft of (see Note 8) datum. Forward limit at 4,000 lbs. and below, +24.0 inches aft of datum. (Straight line variation in the forward limit between 4,000 and 6,000 lbs.). Aft limit +30.0 inches aft of datum. Datum is the leading edge of the wing.		
Maximum Weight	6,000 lbs.		
Maximum Operating Altitude	12,000 feet		
Number of Seats (see Note 8)	1 (+89)		
Maximum Cargo Load	See weight and balance data. Maximum baggage compartment, 60 lbs. (+112). (See NOTE 8). Maximum hopper load, 3336 lbs. (+29.9). (See NOTE 10).		
Fuel Capacity	104 gallons usable, one 53 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel. Also see NOTE 9.		
Oil Tank Capacity	11 quarts - usable oil tank capacity 6 quarts.		
Control Surface Movements (See Note 8)	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $13^{o} \pm 1^{o}$	Down $18^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible (see Note 8)	T11-001 and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved October 26, 1979, and Supplement for Restricted Category Operation approved October 26, 1979, or later approved versions.		
Agricultural Dispersal	See NOTE 17. CAUTION: For operation with the Micronair Spray Equipment System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.		

VII-Model S2R-R1340, 2 PCLM (Restricted Category Only)*, Approved May 6, 1980
*See Note under certification basis, Page 31.
Also see Note 15.

Engine: Pratt & Whitney WASP R-1340-AN-1 (S3H1 or S1H1 Commercial designation) with carburetor parts list settings 395118-3 or A-18639-7. Manifold pressure gage is to be modified per Drawing 60600 when the S1H1 engine is used.

Fuel: 80/87 minimum grade aviation gasoline

Engine Limits

	H.P.	R.P.M.	S3H1 M.P. In. H.G.	ALT.	S1H1 M.P. In. H.G.	ALT.
Takeoff (5 min.)	600	2250	36.0	S.L.	36.5	S.L.
Max. Continuous	550	2200	34.0	S.L.	35.0	S.L.
Max. Continuous	550	2200	32.5	5000	33.0	8000

Propeller and Propeller Limits: Hamilton Standard, constant speed, 12D40 Hub, 6101-12 blades. Diameter 109 inches maximum, 107 inches minimum.
Pitch settings, 11.5° low and 27.0° high at 42 inch station. Alternate settings, 11.5° low and 21.5° high at 42 inch station.

Alternate blades, EAC AG100-2, Diameter 106 inches (2 percent cutoff permitted). Pitch settings 11.5° low and 20° high at 42 inches.

Airspeed Limits (CAS):

Vne (Never Exceed)	159 m.p.h. (138 knots)
Vp (Maneuvering)	126 m.p.h. (109 knots)
Vno (Max. Structural Cruising)	126 m.p.h. (109 knots)
Vfe (Flap Extended)	123 m.p.h. (107 knots)

C.G. Range: (+22.5) to (+30.0) with Elevator Down Spring, P/N 19661-1
(+22.5) to (+27.7) without P/N 19661-1 installed.

Maximum Weight: 6000 lbs.

Number of Seats: 1 (+89.0) (See NOTE 15)
1 (+127 - Forward Facing) or (+111 - Aft Facing)

Maximum Cargo Load: See weight and balance data.
Maximum passenger/cargo compartment, 200 lbs. (+120) (See NOTE 15).
Maximum hopper load, 3336 lbs. (+29.9).

Fuel Capacity: S/N R1340-001DC and subsequent - (104 gallons usable, one 53 gallon tank in each wing, tanks interconnected; or 140 gallons/69 gallon tank in each wing). See NOTE 1 for data on unusable fuel.
Also see NOTE 9.

Oil Tank Capacity: 11.4 gallon total (84 lbs. at -13.6) (9.0 gallons usable).

Control Surface Movements:

Elevator	Up 27° ± 1°	Down 17° ± 1°
Elevator Tab	Up 8° ± 1°	Down 22° ± 1°
Rudder	Left 24° ± 1°	Right 24° ± 1°
Aileron	Up 21° ± 1°	Down 17° ± 1°
Flaps		Down 15° ± 1°

Serial Numbers Eligible: R1340-001DC and subsequent

Required Equipment — The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Airplane Flight Manual and Supplement.

Agricultural Dispersal Equipment — See NOTE 17.

VIII-Model S2R-R1820, 2 PCLM (Restricted Category Agricultural Operations or for Dispensing Fire Fighting Materials Only)*, Approved February 20, 1981
*See Note under certification basis, Page 31.
Also see Note 16.

Engine — Wright R-1820-71, -60, -97, -99; GR-1820G-202A; 702C9GC1, 2, 3, 4; 704C9GC1, 2, 3, 4

Fuel — 100/130 minimum grade aviation gasoline

Engine Limits

	H.P.	R.P.M.	M.P. IN. H.G.	ALT.
Takeoff (1 min.)	1200	2500	45.5	S.L.
Max. Continuous	1000	2300	39.5	S.L.
Max. Continuous	1000	2300	37.2	6900

Straight line variation between points given.

Propeller and Propeller Limits

a. With Wright R-1820-71, -60, GR-1820G-202A; 702C9GC1, 2, 3, 4; 704C9GC1, 2, 3, 4 engines:
Hamilton Standard 43D50 or 33D50 constant speed -

1. Hub Model: 43D50-321
Blade Model: 6933A-9
Diameter: 111" Maximum, 109" Minimum
Pitch Settings: At 42 inch Station - Low 21.5°, High 52.5°

2. Hub Model: 33D50-119
Blade Model: 6601-18S or 7005-18S
Diameter: 120-5/8" Maximum, 117-5/8" Minimum
Pitch Settings: At 42 inch Station - Low 19°, High 39°

b. With Wright R-1820-97 or R-1820-99 engines Hamilton Standard 23E50 constant speed:

Blade Model: Serv-Aero SA10P-18Q
Diameter: 120-1/4" Maximum, 117-3/4" Minimum
Pitch Settings: At 42 inch Station - Low 26°, High 50°

c. Governor: Hamilton Standard 4G-10-7

Airspeed Limits (CAS)	Vne (Never Exceed)	159 m.p.h. (138 knots)	
	Vp (Maneuvering)	126 m.p.h. (109 knots)	
	Vno (Max. Structural Cruising)	126 m.p.h. (109 knots)	
	Vfe (Flap Extended)	123 m.p.h. (107 knots)	
C.G. Range (See Note 16)	(+23) to (+30.0) with Elevator Down Spring, P/N 19661-1 (+23) to (+27.5) without P/N 19661-1 installed.		
Maximum Weight	6000 lbs.		
Number of Seats (See Note 16)	1 (+89.0) 1 (+127 - Forward Facing) or (+111 - Aft Facing)		
Maximum Cargo Load	See weight and balance data. Maximum passenger/cargo compartment, 200 lbs. (+120). See NOTE 16. Maximum hopper load, 3336 lbs. (+29.9). See NOTE 10.		
Fuel Capacity	S/N R1820-001DC and subsequent - (190 gallons usable, one 96 gallon tank in each wing, tanks interconnected). See NOTE 1 for data on unusable fuel. Also see NOTE 9.		
Oil Tank Capacity	13 gallons total at Station (+153). See NOTE 16.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $12^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	R1820-001DC and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved February 20, 1981, or later approved version.		
Agricultural Dispersal Equipment	See NOTE 17.		

IX-Model S2R-T65, 2 PCLM (Restricted Category Only)*, Approved September 3, 1987
*See Note under certification basis, Page 31.

Engine	United Aircraft of Canada PT6A-65AG
Fuel	Jet A, Jet B, JP-4, JP-5, in accordance with UACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.)
Oil	UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Idle
SHP	1230		
Torque (PSI) (2 sec.)	45.4	61.0 Trans	
ITT (^{O}C)	810	1000 Start (5 sec.)	715
Ng (%)	104		58
Np (RPM)	1700	1870 Trans (5 sec.)	
Oil Press (PSIG)	90 to 135		60 min.
Oil Temp (^{O}C)	0 to 110	0 to 110	-40 to 110

Propeller and Propeller Limits

Hartzell HC-B5MP-3C propeller, constant speed, feathering and reversing; Hub Model HC-B5MP-3C; Blade Model M10876.
Diameter 111.0 maximum, 110.7 inches minimum.

Certification Basis

(1) CAR 8.10(a)(1), dated October 11, 1950, including the Airworthiness requirements of Appendix B.

(2) FAR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-16 only as applicable to turboprop engine installations and listed by FAR section below.*

(3) The intent of FAR 25.305(c) regarding the dynamic response of the engine mount structure.

*	23.49(e)(2)(-21)	23.959(-7)	23.1143(-7)
	23.65(c)(-21)	23.977(-17)	23.1145(-18)
	23.75(b)(-7)	23.991(-7)	23.1155(-7)
	23.77(b)(-21)	23.997(-15)	23.1165(0)
	23.173(-14)	23.1013(-15)	23.1183(-15)
	23.175(-14)	23.1015(-15)	23.1303(0)
	23.177(0)	23.1019(-15)	23.1305(-15)
	23.371(-7)	23.1027(-14)	23.1323(-7)
	23.629(e)(-31)	23.1041(-7)	23.1337(-7)
	23.831(0)	23.1043(-7)	23.1353(-20)
	23.901(-7)	23.1045(-7)	23.1521(0)
	23.903(-14)	23.1091(-7)	23.1527(-7)
	23.905(0)	23.1093(-15)	23.1529(-8)
	23.929(-14)	23.1103(-7)	23.1545(-7)
	23.933(-7)	23.1105(0)	23.1549(-17)
	23.937(-7)	23.1111(-7)	23.1557(-14)
	23.951(-15)	23.1121(-7)	23.1583(-10)
	23.955(-7)	23.1141(-14)	23.1587(a)(-7)
			23.305(c)(-9)

Airspeed Limits (CAS)

Vne (Never Exceed)	159 m.p.h. (138 knots)
Vp (Maneuvering)	126 m.p.h. (109 knots)
Vno (Max. Structural Cruising)	126 m.p.h. (109 knots)
Vfe (Flap Extended)	123 m.p.h. (107 knots)

C.G. Range	Forward Limit +22.5 inches aft of datum Aft Limit +29.0 inches aft of datum. Datum is the leading edge of the wing.		
Maximum Weight	6000 lbs.		
Maximum Operating Altitude	12,000 feet		
Number of Seats	1 (+89) 1 (+127)		
Maximum Cargo Load	See weight and balance data. Maximum passenger/cargo compartment, 200 lbs. (+120). Maximum hopper load, 4000 lbs. (+29.9).		
Fuel Capacity	228 gallon usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.		
Oil Tank Capacity	11 quarts - usable oil tank capacity 6 quarts.		
Control Surface Movements (See Note 8)	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	T65-001DC and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved September 3, 1987, and Supplement for Restricted Category Operation approved September 3, 1987, or later approved version.		
Agricultural Dispersal	See NOTE 17. CAUTION: For operation with the Micronair Spray Equipment System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.		

X Model S2RHG-T65, 2 PCLM (Restricted Category Only)*, Approved June 8, 1988
*See Note under certification basis, Page 31.

Engine	United Aircraft of Canada PT6A-65AG
Fuel	Jet A, Jet B, JP-4, JP-5, in accordance with UACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.)
Oil	UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Idle
SHP	1230		
Torque (PSI) (2 sec.)	45.4	61.0 Trans	
ITT (^{O}C)	810	1000 Start (5 sec.)	715
Ng (%)	104		58
Np (RPM)	1700	1870 Trans (5 sec.)	
Oil Press (PSIG)	90 to 135		60 min.
Oil Temp (^{O}C)	0 to 110	0 to 110	-40 to 110

Propeller and Propeller Limits

Hartzell HC-B5MP-3C propeller, constant speed, feathering and reversing; Hub Model HC-B5MP-3C; Blade Model M10876.
Diameter 111.0 inches maximum, 110.7 inches minimum.

Certification Basis

- FAR 21.25
- CAR 3, effective May 15, 1956, including Amendments 3-1 through 3-8 as modified by CAR 8.10(a)(1) effective October 11, 1950.
- FAR 23, effective February 1, 1965, Amendments 23-1 through 23.34, only applicable to Subpart C, excluding 23.571 and 23.572.
- FAR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-16 only as applicable to turboprop engine installations and listed by FAR section below.*
- Exemption No. 4898 (CAR 3.83 - 70 mph stall speed) issued January 21, 1988.
- Equivalent Safety Finding to FAR 23.473(b), dated March 15, 1988
- The intent of FAR 25.305(c) regarding the dynamic response of the engine mount structure.

* 23.49(e)(2)(-21)
23.65(c)(-21)
23.75(b)(7)
23.77(b)(-21)
23.173(-14)
23.175(-14)
23.177(0)
23.371(-7)
23.629(e)(-31)
23.831(0)
23.901(-7)
23.903(-14)
23.905(0)
23.929(-14)
23.933(-7)
23.937(-7)
23.951(-15)
23.955(-7)
23.959(-7)
23.977(-17)
23.991(-7)
23.997(-15)
23.1013(-15)
23.1015(-15)
23.1019(-15)
23.1027(-14)
23.1041(-7)
23.1043(-7)
23.1045(-7)
23.1091(-7)
23.1093(-15)
23.1103(-7)
23.1105(0)
23.1111(-7)
23.1121(-7)
23.1141(-14)
23.1143(-7)
23.1145(-18)
23.1155(-7)
23.1165(0)
23.1183(-15)
23.1303(0)
23.1305(-15)
23.1323(-7)
23.1337(-7)
23.1353(-20)
23.1521(0)
23.1527(-7)
23.1529(-8)
23.1545(-7)
23.1549(-17)
23.1557(-14)
23.1583(-10)
23.1587(a)(-7)

Airspeed Limits (CAS)	Vne (Never Exceed)	220 m.p.h. (191 knots)	
	Vp (Maneuvering)	167 m.p.h. (145 knots)	
	Vno (Max. Structural Cruising)	187 m.p.h. (163 knots)	
	Vfe (Flap Extended)	157 m.p.h. (137 knots)	

C.G. Range

Forward Limit 7600 pounds and below is +22.5 inches aft of datum
Forward limit at 10500 pounds is 26 inches aft of datum with straight line variation to 7600 pounds at 22.5 inches.
Aft Limit at all weights is +29.0 inches aft of datum.
Datum is the leading edge of the wing.

Maximum Takeoff Weight 10,500 lbs.
Maximum Landing Weight 7,600 lbs.
Minimum Weight 5,000 lbs.

Maximum Operating Altitude 12,000 feet

Number of Seats 1 (+89)
1 (+127)

Maximum Cargo Load

See weight and balance data.
Maximum passenger/cargo compartment, 200 lbs. (+120).
Maximum hopper load, 4000 lbs. (+29.9).

Fuel Capacity

228 gallon usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.

Oil Tank Capacity

11 quarts - usable oil tank capacity 6 quarts.

Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$

Serial Numbers Eligible T65-002DC and subsequent

Required Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved June 8, 1988, and Supplement for Restricted Category Operation approved June 8, 1988, or later approved version.

Agricultural Equipment

High Volume Dispersal System, Ayres Dwg. No. 21563. Dispersal S/N T65-002DC and subsequent.
See NOTE 17 for additional optional equipment.

CAUTION: For operation with the Micronair Spray System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.

XI-Model S2R-T45, 2 PCLM (Restricted Category Only)*, Approved July 23, 1990
*See Note under certification basis, Page 31.
Also see Note 21.

Engine: United Aircraft of Canada PT6A-45, -45A, -45B, -45R (Dry ratings only)

Fuel: See Airplane Flight Manual

Oil: UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel. (2 sec.)	Reverse	Idle
SHP	1173 (TO) 1020 (MC)		900	
Torque (PSI)	43.3	61 Accel.		
ITT (^{O}C)	800	1000 Start 850 Accel.	800	700
Ng (%)	104	104		52
Np (RPM)	1700	1870	1650	
Oil Press (PSIG)	100 to 135		100 to 135	60 min.
Oil Temp (^{O}C)	10 to 99	-40 min. start 0 to 104 accel.	0 to 99	-40 to 99

Propeller and Propeller Limits: Hartzell HC-B5MP-3C propeller, constant speed, feathering and reversing; Hub Model HC-B5MP-3C; Blade Model M-10876.

Diameter 111 inches maximum, 106.0 inches minimum.

Airspeed Limits (CAS)

Vne (Never Exceed)	159 mph (138 knots)
Vp (Maneuvering)	126 mph (109 knots)
Vno (Max. Structural Cruising)	126 mph (109 knots)
Vfe (Flap Extended)	123 mph (107 knots)
Maximum Dump Speed	120 mph (104 knots)

C. G. Range: (+22.5) to (+27.5) without Elevator Down Spring, P/N 19661-1
(+22.5) to (+29.0) with P/N 19661-1 installed.

Maximum Weight: 6,000 lbs.

Maximum Operating Altitude: 12,000 feet

Number of Seats (See Note 21): 1 (+89)
1 (+127)

Maximum Cargo Load: Passenger/cargo compartment 200 lbs. maximum.
See NOTE 21.
Maximum hopper load, 4000 lbs. (+29.9).

Fuel Capacity: 228 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.

Oil Tank Capacity: 11 quarts - usable oil tank capacity 6 quarts.

Control Surface Movements (See Note 21)	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$

Serial Numbers Eligible — T45-001DC and subsequent

Required Equipment — The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved July 20, 1990, or later approved version.

Agricultural Dispersal Equipment — See NOTE 17.

XII-Model S2R-G6, 1 PCLM (Restricted Category Only)*, Approved March 5, 1992
*See Note under certification basis, Page 31.
Also see Note 8.

Engine — Garrett TPE331-6

Fuel — See Airplane Flight Manual

Oil — MIL-L-23699B

Engine Limits

	Takeoff (5 min.)	Max. Continuous	Ground Idle	Starting
SHP	750	715		
Torque (PSI)	100	95		
ITT (^{o}C)	923	923		1149 max.
RPM (%)*	100	100	65 to 85	
Oil Press (PSIG)	70 to 120	70 to 120	40 to 120	
Oil Temp (^{o}C)	55 to 127	55 to 127	-40 to 127	-40 to 127

* Avoid operation between 18 and 28 percent RPM, except for transient during start and shutdown.

Propeller and Propeller Limits — Hartzell propeller, Hub Model HCB3TN-5M, Blade Model T10282N+4. Diameter 106.0 inches maximum, 102.0 inches minimum.

Airspeed Limits (CAS)	Vne (Never Exceed)	159 mph (138 knots)
	Vp (Maneuvering)	126 mph (109 knots)
	Vno (Max. Structural Cruising)	126 mph (109 knots)
	Vfe (Flap Extended)	123 mph (107 knots)
	Maximum Dump Speed	120 mph (104 knots)

C. G. Range — (+26.5) to (+30.0) at 6000 lbs.
(+24.0) to (+30.0) at 4000 lbs.
Straight line variation in the forward limit between 4000 lbs. and 6000 lbs.

Maximum Weight — 6,000 lbs.

Maximum Operating Altitude — 12,000 feet

Number of Seats (See Note 8)	1 (+89)		
Maximum Cargo Load	Maximum baggage compartment 60 lbs. See NOTE 8. Maximum hopper load, 4000 lbs. (+29.9).		
Fuel Capacity	228 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.		
Oil Tank Capacity	8 quarts - usable oil tank capacity 7 quarts.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $19^{o} \pm 1^{o}$	Right $19^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	G6-101 and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved March 5, 1992, or later approved version.		
Agricultural Dispersal Equipment	See NOTE 17.		

XIII-Model S2R-G10, 1 PCLM (Restricted Category Only)*, Approved January 12, 1993
*See Note under certification basis, Page 31.
Also see Note 8.

Engine	Garrett TPE331-10
Fuel	See Airplane Flight Manual
Oil	MIL-L-23699B

Engine Limits

	Takeoff (5 min.)	Max. Continuous	Ground Idle	Starting
SHP	900	900		
Torque (PSI)	100	100		
EGT (^{o}C)	**	**	**	770 max.
RPM (%)*	100	100	65 to 85	
Oil Press (PSIG)	70 to 120	70 to 120	40 to 120	
Oil Temp (^{o}C)	55 to 127	55 to 110	-40 to 110	-40 to 110

*Avoid operation between 18 and 28 percent RPM, except for transient during start and shutdown.
**EGT Limits: 600^{o}C EGT at 45^{o}C OAT and 540^{o}C EGT at -15^{o}C OAT, straight line variation in between.

Propeller and Propeller Limits	McCauley Hub Model 4HFR34C653-[X], Blade Model [X]-L106FA-0. Diameter 106.0 inches maximum, 105.0 inches minimum.		
	McCauley Hub Model 4HFR34C662-[X], Blade Model [X]-L108FA-0. Diameter 108.0 inches maximum, 105.0 inches minimum.		
	Hartzell Model HC-B4TN-5NL, Blade Model LT10890N. Diameter 109.5 inches maximum, 107.5 inches minimum.		
Airspeed Limits (CAS)	Vne (Never Exceed)	159 mph (138 knots)	
	Vp (Maneuvering)	126 mph (109 knots)	
	Vno (Max. Structural Cruising)	126 mph (109 knots)	
	Vfe (Flap Extended)	123 mph (107 knots)	
	Maximum Dump Speed	120 mph (104 knots)	
C. G. Range	(+26.5) to (+30.0) at 6000 lbs. (+24.0) to (+30.0) at 4000 lbs. Straight line variation in the forward limit between 4000 lbs. and 6000 lbs.		
Maximum Weight	6,000 lbs.		
Maximum Operating Altitude	12,000 feet		
Number of Seats (see Note 8)	1 (+89)		
Maximum Cargo Load	Maximum baggage compartment 60 lbs. See NOTE 8. Maximum hopper load, 4000 lbs. (+29.9).		
Fuel Capacity	228 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.		
Oil Tank Capacity	8 quarts - usable oil tank capacity 7 quarts.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $19^{o} \pm 1^{o}$	Right $19^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	G10-101 and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved January 12, 1993, or later approved version.		
Agricultural Dispersal Equipment	See NOTE 17.		

XIV-Model S2R-G5, 1 PCLM (Restricted Category Only)*, Approved August 20, 1993
*See Note under certification basis, Page 31.
Also see Note 8.

Engine: Garrett TPE331-5

Fuel: See Airplane Flight Manual

Oil: MIL-L-23699B

Engine Limits

	Takeoff (5 min.)	Max. Continuous	Ground Idle	Starting
SHP	750	715		
Torque (PSI)	100	95		
ITT (^{O}C)	923	923		1149 max.
RPM (%)*	100	100	65 to 85	
Oil Press (PSIG)	70 to 120	70 to 120	40 to 120	
Oil Temp (^{O}C)	55 to 127	55 to 110	-40 to 110	-40 to 110

* Avoid operation between 18 and 28 percent RPM, except for transient during start and shutdown.

Propeller and Propeller Limits: McCauley Hub Model 4HFR34C653-[X], Blade Model [X]-L106FA-0. Diameter 106.0 inches maximum, 105.0 inches minimum.

McCauley Hub Model 4HFR34C662-[X], Blade Model [X]-L108FA-0. Diameter 108.0 inches maximum, 105.0 inches minimum.

Hartzell Model HC-B4TN-5NL, Blade Model LT10890N. Diameter 109.5 inches maximum, 107.5 inches minimum.

Airspeed Limits (CAS)

Vne (Never Exceed)	159 mph (138 knots)
Vp (Maneuvering)	126 mph (109 knots)
Vno (Max. Structural Cruising)	126 mph (109 knots)
Vfe (Flap Extended)	123 mph (107 knots)
Maximum Dump Speed	120 mph (104 knots)

C. G. Range: (+26.5) to (+30.0) at 6000 lbs.
(+24.0) to (+30.0) at 4000 lbs.
Straight line variation in the forward limit between 4000 lbs. and 6000 lbs.

Maximum Weight: 6,000 lbs.

Maximum Operating Altitude: 12,000 feet

Number of Seats (See Note 8): 1 (+89)

Maximum Cargo Load: Maximum baggage compartment 60 lbs. See NOTE 8.
Maximum hopper load, 4000 lbs. (+29.9).

Fuel Capacity: 228 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.

Oil Tank Capacity	8 quarts - usable oil tank capacity 7 quarts.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $19^{o} \pm 1^{o}$	Right $19^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	G5-101 and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved August 20, 1993, or later approved version.		
Agricultural Dispersal Equipment	See NOTE 17.		

XV-Model S2R-G1, 1PCLM (Restricted Category Only), Approved August 29, 1995.
See Note under certification basis, Page 31.

Engine	Garrett TPE331-1				
Fuel	See Airplane Flight Manual				
Engine Limits		Takeoff (5 min)	Max. Continuous	Ground Idle	Starting
	SHP	665	665		
	Torque (%)	100	100		
	EGT (°C)	**	**	**	
	RPM (%)*	100	100	65 to 85	
	Oil Pressure (PSIG)	70 - 120	70 - 120	40 - 120	
	Oil Temp (°C)	55 - 127	55 - 110	-40 to 110	-40 to 110

* Avoid operation between 18 and 28 percent RPM except for transient during start and shutdown.
** EGT Limits: 600°C EGT at 120°F OAT and 520°C EGT at 0°F OAT, straight line variation between.

Propeller and Propeller Limits	Hartzell Hub Model HCB3TN-5M, Blade Model T10282N+4. Diameter 106.0 inches maximum, 102.0 inches minimum.	
Airspeed Limits (CAS)	V_{NE} (Never Exceed)	159 mph (138 knots)
	V_a (Maneuvering)	126 mph (109 knots)
	V_{no} (Max. Structural Cruising)	126 mph (109 knots)
	V_{fe} (Flap Extended)	123 mph (107 knots)
	Maximum Dump Speed	120 mph (104 knots)
C.G. Range	(+26.5) to (+30.0) at 6000 lbs. (+24.0) to (+30.0) at 4000 lbs. Straight line variation in the forward limit between 4000 lbs. and 6000 lbs.	
Maximum Weight	6000 lbs.	

Maximum Operating Altitude	12,000 feet
Number of Seats	1 (+89)
Maximum Cargo Load	See weight and balance data. Maximum baggage compartment, 60.0 lbs. Maximum hopper load, 4000 lbs. (+29.9).
Fuel Capacity	104 gallons usable (one 53 gallon tank in each wing, tanks interconnected). 140 gallons usable (one 69 gallon tank in each wing, tanks interconnected). See NOTE 1 for data on unusable fuel.
Oil Tank Capacity	8 quarts - usable oil tank capacity 7 quarts.

Control Surface Movements		
Elevator	Up 27° ± 1°	Down 17° ± 1°
Elevator Tab	Up 8° ± 1°	Down 22° ± 1°
Rudder	Left 19° ± 1°	Right 19° ± 1°
Aileron	Up 21° ± 1°	Down 17° ± 1°
Flaps		Down 17° ± 1°

Serial Numbers Eligible	G1-101 and subsequent.
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness \ regulation (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved August 29, 1995, or later approved revision.
Agricultural Dispersal Equipment	See NOTE 17

XVI-Model S2RHG-T34, 2 PCLM (Restricted Category Only)*, Approved November 5, 1997
*See Note under Certification Basis, Page 31.

Engine	United Aircraft of Canada PT6A-34AG Optional Engines: United Aircraft of Canada PT6A-34 (See NOTE 12) United Aircraft of Canada PT6A-36 (Dry Configuration Only) United Aircraft of Canada PT6A-41, PT6A-41AG, and PT6A-42 (See NOTE 14)
Fuel	Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1D or 2D in accordance with UACL Service Bulletin Number 1344. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.) Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above: +20°F for Grade No. 1D +40°F for Grade No. 2D
Oil	UACL PT6 Engine Service Bulletin Number 1001 lists approved brands of oil.

Engine Limits

	Takeoff and Max. Cont.	Transient Start/Accel.	Reverse	Idle
SHP	750			
Torque(PSI)(2sec)	64.5	68.4 Trans	64.5	
ITT (°C)	790	1090 Start (2 sec.)	790	

Ng (%)	101.5	102.6 Trans (2 sec.)	101.5	
Np (RPM)	2200	2420 Trans (2 sec.)	2100	
Oil Press(PSIG)	85 to 100	85 to 100	85 to 100	40 min.
Oil Temp (^{O}C)	10 to 99	-40 min. 99 5 min.	0 to 99	-40 to 99

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

Propeller and Propeller Limits

Hartzell Hub Model HC-B3TN-3C (or HC-B3TN-3D) with Blade Model T-10282, Diameter 102.5 inches maximum, 92.5 inches minimum or optional Blade Model T-10282(n)+4, Diameter 106 inches maximum, 98 inches minimum.

Certification Basis

a. FAR 21.25

b. CAR 3, effective May 15, 1956, including Amendments 3-1 through 3-8 as modified by CAR 8.10(a)(1) effective October 11, 1950, except the following paragraphs (allowed under FAR 21.25(a)(1):
CAR 3.83
CAR 3.780(a)(3)
CAR 3.780(a)(4)

c. FAR 23, effective February 1, 1965, Amendments 23-1 through 23.34, only applicable to Subpart C and other FAR sections listed below.*

d. FAR Part 23, effective February 1, 1965, including Amendments 23-1 through 23-16 only as applicable to turboprop engine installations and listed by FAR section below.*

e. Equivalent Safety Finding to FAR 23.473(b), dated March 15, 1988.

f. The intent of FAR 25.305(c) regarding the dynamic response of the engine mount structure.

* 23.49(e)(2)(-21)
23.65(c)(-21)
23.75(b)(-7)
23.77(b)(-21)
23.173(-14)
23.175(-14)
23.177(0)
23.371(-7)
23.572(a)(1)(-34)
23.629(e)(-31)
23.831(0)
23.901(-7)
23.903(-14)
23.905(0)
23.907
23.929(-14)
23.933(-7)
23.937(-7)
23.951(-15)
23.955(-7)
23.959(-7)
23.977(-17)
23.991(-7)
23.997(-15)
23.1013(-15)
23.1015(-15)
23.1019(-15)
23.1027(-14)
23.1041(-7)
23.1043(-7)
23.1045(-7)
23.1091(-7)
23.1093(-15)
23.1103(-7)
23.1105(0)
23.1111(-7)
23.1121(-7)
23.1141(-14)
23.1143(-7)
23.1145(-18)
23.1155(-7)
23.1165(0)
23.1183(-15)
23.1303(0)
23.1305(-15)
23.1323(-7)
23.1337(-7)
23.1353(-20)
23.1521(0)
23.1527(-7)
23.1529(-8)
23.1545(-7)
23.1549(-17)
23.1557(-14)
23.1583(-10)
23.1587(a)(-7)

Airspeed Limits (CAS)	Vne (Never Exceed)	190 mph (165 knots)	
	Vp (Maneuvering)	154 mph (134 knots)	
	Vno (Max. Structural Cruising)	162 mph (141 knots)	
	Vfe (Flap Extended)	144 mph (125 knots)	
C. G. Range	Forward limit at 7,600 lbs. and below, +22.5 inches aft of datum. Forward limit at 9,500 lbs., +26.0 inches aft of datum. (Straight line variation in the forward limit between 7,600 and 9,500 lbs.) Aft limit +29.0 inches aft of datum. Datum is the leading edge of the wing.		
Maximum Weight	9,500 lbs.		
Maximum Operating Altitude	12,000 feet		
Number of Seats	1 (+89) 1 (+127 forward facing) or (+111 aft facing)		
Maximum Cargo Load	See weight and balance data. Maximum passenger/cargo compartment, 200 lbs. (+120). Maximum hopper load, 4,000 lbs. (+29.9).		
Fuel Capacity	228 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.		
Oil Tank Capacity	11 quarts - usable oil tank capacity 6 quarts.		
Control Surface Movements	Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
	Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
	Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
	Flaps		Down $15^{o} \pm 1^{o}$
Serial Numbers Eligible	T34HG-101DC and subsequent		
Required Equipment	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved November 5, 1997, or later approved versions.		
Agricultural Dispersal	See NOTE 17. CAUTION: For operation with the Micronair Spray Equipment System or the Fire Bomber System, or with any system when an Agavenco pump is installed, the placards for airspeed limitations referred to in NOTE 2(q), 2(o), or 2(p), respectively, for the S2R are applicable.		
Structural Limitations	Wing Main Spar Assembly, P/N 20203, and Wing Main Spar Splice Blocks, P/N 20260, must be replaced every 9,200 hours time in service.		

XVII-Model S2R-T660, 1 PCLM (Restricted Category Only)*, Approved March 13,2000
*See Note under Certification Basis, Page 31.

Engine — United Aircraft of Canada PT6A-60AG

Fuel — Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1D or 2D in accordance with P&WC Specifications CPW 204, CPW 46, CPW 381. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls.) Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above:
+20°F for Grade No. 1D
+40°F for Grade No. 2D

Oil — UACL PT6 Engine Service Bulletin Number 1001, 3001, 4001, 11001, 12002 and 13001 lists approved brands of engine oil.

Engine Limits

		Max.	Transient*			
	Takeoff	Cont.	Start	Accel.	Reverse	Idle
SHP	1050	1020			900	
Torque (PSI)	38.8	37.7		61		
ITT (°C)	820	775	1000	850	760	
Ng (%)	104	104	104	104		58
Np (RPM)	1700	1700		1870	1650	
Oil Press (PSIG)	90 to 135	90 to 135	0 to 200	40 to 200	90 to 135	60 Minimum
Oil Temp (°C)	0 to 110	0 to 110	0 to 110	0 to 110	0 to 99	-40 to 110

*Transient engine limits are 5 seconds for starting and 20 seconds for acceleration.
Maximum torque and maximum Np are NOT available concurrently without exceeding maximum SHP.

$$SHP = \frac{Torque(PSI) \times RPM}{62.79}$$

Propeller and Propeller Limits — Hartzell HC-B5MP-3C propeller, constant speed, feathering and reversing;
Hub Model HC-B5MP-3C with Blade Model M 20876ANS;
Diameter 111.0 inches maximum, 110.7 inches minimum.

Certification Basis

a. 14CFR Part 21.25

b. 14CFR Part 23 -
Subpart A, Amendment 23-53;
Subpart B, Amendment 23-53;
Subpart C, Amendment 23-53 except §§23.423, 23.425, 23.427, 23.441, 23.443, and 23.455 at Amendment 23-34;
Subpart D, Amendment 23-53 except §23.607 at Amendment 23-34, §23.629 at Amendment 23-31, and §§23.785, 23.787, 23.807, 23.853, 23.863, 23.865 and 23.867 at Amendment 23-14;
Subpart E, Amendment 23-14;
Subpart F, Amendment 23-0;
Subpart G, Amendment 23-53;
except those regulations found inappropriate for restricted category agricultural airplanes as listed in FAA Advisory Circular 21.25-1, dated December 1, 1997, and compliance with regulations listed in ACE-110 policy memorandum, dated December 1, 1997, demonstrated in accordance with that memorandum.

Airspeed Limits (CAS)	Vne (Never Exceed)	220 mph (191 knots)
	V_A (Maneuvering)	161 mph (140 knots)
	Vno (Max. Structural Cruising)	207 mph (180 knots)
	Vfe (Flap Extended)	145 mph (126 knots)

C. G. Range

Forward Limit at 12,500 lbs. is 24 inches aft of datum with straight line variation to 8,000 lbs. at 27 inches aft of datum.
Forward Limit below 8,000 pounds is 27 inches aft of datum.
Aft Limit at 12,500 lbs. is 27 inches aft of datum with straight line variation to 8,000 lbs. at 30 inches aft of datum.
Aft Limit below 8,000 lbs. is +30.0 inches aft of datum.
Datum is the leading edge of the wing.

Maximum Takeoff Weight

12,500 lbs.

Maximum Landing Weight

12,500 lbs.

Minimum Weight

6,100 lbs.

Maximum Operating Altitude

12,000 feet

Number of Seats

1 (+89)

Maximum Cargo Load

See weight and balance data.
Maximum baggage compartment load is 200 lbs.(+112).
Maximum hopper load, 5,500 lbs.(+20.6).

Fuel Capacity

225.6 gallons usable, one 115 gallon tank in each wing, tanks interconnected. See NOTE 1 for data on unusable fuel.

Oil Tank Capacity

10 U.S. quarts - usable oil tank capacity 6 quarts.

Control Surface Movements	Elevator	Up $27^o \pm 1^o$	Down $17^o \pm 1^o$
	Elevator Tab	Up $8^o \pm 1^o$	Down $22^o \pm 1^o$
	Rudder	Left $19^o \pm 1^o$	Right $19^o \pm 1^o$
	Aileron	Up $21^o \pm 1^o$	Down $17^o \pm 1^o$
	Flaps		Down $15^o \pm 1^o$

Serial Numbers Eligible

T660-101 and subsequent

Required Equipment

The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved March 13,2000, or later approved revision.

Agricultural Dispersal Equipment

Standard Spray System, Ayres Dwg. No. 95340

Structural Limitations

The following parts must be replaced at the times in service indicated:

Part Name	Part Number	Life Limit
Rear Spar Doubler, Lower	95627-3	20,000
Rear Spar, Inboard, L&R	95623-1/-2	20,000
Aft Main Spar Lug, L&R	95605-1/-2	21,750
Forward Main Spar Lug, L&R	95606-1/-2	20,000
Wing Skin Assy., Lower Inboard, L&R	95641-1/-2	19,550
Aluminum Skin at Web Flange	95614-11/-12	22,850
Spar Cap Assy, L&R	95603-1/-2	26,625
Steel Doubler Plate	95614-1	38,400

Data Pertinent to All Models

Certification Basis For All Models Except S2R-T65, S2RHG-T65, S2RHG-T34 and S2R-T660. See Sections IX, X, XVI and XVII	CAR 8 effective October 11, 1950, restricted category. Type certificate A4SW issued November 1, 1965. NOTE: Model S2R-R1340 and other models certificated after January 1, 1980, are to be certificated for dispensing fire fighting materials and for agricultural use only due to FAR 36.1(e) requirements.
Datum	Wing leading edge.
Leveling Means	Lower longeron below cockpit.
Production Basis	Production Certificate Number 5SO.
Export Eligibility	Aircraft will be eligible for issuance of an Export Certificate of Airworthiness subject to compliance with Federal Aviation Regulations Part 21, Subpart L, Sections 21.321 through 21.339. Special requirements of specific foreign countries are contained in Advisory Circular 21-2D.
NOTE 1:	Current weight and balance report including list of equipment included in certificated empty weight, and loading instructions when necessary, must be provided for each aircraft at the time of original certification. The empty weight and corresponding center of gravity location must include the following unusable fuel:

Model 600 S2D, all serial numbers	54 lbs. at (+38.5)
Model S2R, S/N 1380R	24 lbs. at (+38.5)
Model S2R, S/N 1416R and 1418R	36 lbs. at (+38.5)
Model S2R, S/N 1419R thru 1499R, 1501R thru 1510R	48 lbs. at (+38.5)
Model S2R, S/N 1500R, 1511R thru 4999R, 5000R and subsequent	18 lbs. at (+38.5)
Models S2R-T34, S2R-T15, S2R-T65, S2RHG-T65, S2R-R3S, S2R-T11, S2R-R1340, S2R-R1820, S2R-T45, S2R-G6, S2R-G10, S2R-G5, S2R-G1, and S2RHG-T34, all serial numbers	18 lbs. at (+38.5)
Model S2R-T660, all serial numbers	30 lbs. at (+33.5)

NOTE 2: The following information on placards pertaining to flight and operating instructions and limitations must be displayed in full view of the pilot:

(a) Restricted

(b) This airplane must be operated as a restricted category airplane in accordance with the operating limitations stated in the form of placards and the Airplane Flight Manual.

(c) No acrobatic maneuvers including spins approved.

(d) (1) Model 600-S2D: The operation of this airplane is limited to day VFR conditions. Flight into known icing conditions prohibited. (See NOTE 3).

(2) Model S2R: The operation of this airplane is limited to day and night VFR conditions. Flight into known icing conditions prohibited.

(e) S2D and S2R only: Design Maneuvering Speed: 126 mph
Maximum Crosswind Velocity: 15 mph
Maximum flap-down speed: 123 mph (S2R only)

(f) S2D and S2R only.- Avoid continuous ground operation between 1280 and 1900 R.P.M.

(g) Adjacent to stall warning switch when dry battery stall warning system is installed: Stall warning switch must be on in flight. Change battery every four onths to dated Eveready 6V No. 1461. Mark date battery changed on battery. S/N 1311D thru 1415D, S/N 1380R, 1416R thru 1440R.

(h) Adjacent to stall warning switch when 12 or 24 volt electrical system installed with: Stall warning system is inoperative with generator and battery switches off. S/N 1311D thru 1415D, S/N 1380R, 1416R thru 1440R.

(i) When stall warning system is installed: Stall warning light -- test light daily before flight by moving lift indicator until light comes on. S/N 1311D thru 1415D, S/N 1380R, 1416R thru 1440R.

(j) When canopy is installed: No smoking

(k) Park brake: On, depress pedals and pull lever.
Off, depress pedals

(l) When locking tail wheel is installed:
Push stick forward to unlock tail wheel.

(m) Usable tank capacity (See "Fuel Capacity")

(n) S2D Only - when Snow Spreader, Dwg. No. 80188, or Small Swathmaster, Dwg. No. 80187, is installed:
When the Snow Spreader or Small Swathmaster dispersal systems are installed, the following airspeed limitationsmust be observed:

Maximum Maneuvering Speed	111 mph CAS
Never Exceed Speed	140 mph

(o) S2R Only - when the Fire Bomber System, Dwg. No. 80792 for S/N 1416R thru 1576R or Dwg. No. 81069 for S/N 1577R and subsequent, is installed the following airspeed limitations must be observed:
With Fire Bomber Dump System installation and any disposal load, do not exceed 120 mph CAS.

(p) S2R Only (Agavenco Pump Only):
Do not operate pump above 115 mph CAS

(q) S2R Only:
Do not operate Micronair Units above 125 mph (CAS)

(r) The following placard must be displayed on the wings and adjacent to the fuel filler caps:
FUEL (*) US GAL. MIN. OCTANE 87 FUEL TANKS ARE INTERCONNECTED - ALLOW SUFFICIENT TIME FOR FUEL LEVEL TO EQUALIZE BEFORE TOP-OFF OF TANKS. NO AROMATIC FUEL."

* 54.5 for 600 S2D Models
35 for S/N 1380R Model S2R
53 for S/N 1416R and subsequent
See NOTE 9.

(s) The following placard must be displayed adjacent to the oil filler cap:
OIL TANK
(*) GAL. CAP.
* 9.2 for S2R
10.9 for 600-S2D

(t) Sulphur dusting is prohibited unless special fire prevention measures have been incorporated in the aircraft.

(u) Placards for Model S2R-R1820.

1. In clear view of the pilot:
"ENGINE OPERATION LIMITS
Takeoff only (1 min.) 2500 RPM at 45.5" hg. at sea level (1200 H.P.)
For all other Operations - 1000 H.P. at 2300 RPM, 39.5: hg. & S.L.
- 1000 H.P. at 2300 RPM 37.2: hg. at 6900 ft.
STRAIGHT LINE VARIATION BETWEEN POINTS GIVEN
100/130 MIN. GRADE AVIATION GASOLINE".

2. At aux. fuel pump circuit breaker switch:
"AUX. FUEL PUMP ON
OFF"

3. ON THROTTLE QUADRANT:
- MAN RICH
- AUTO RICH
"MIXTURE - AUTO LEAN
- FUEL CUTOFF".

4. At the primer switch and at the appropriate detent:
"PRIMER ON
OFF"

5. At the auxiliary fuel pump switch:
"AUX. PUMP ON
OFF"

6. At circuit breaker:
"PRIMER
2 AMPS"

7. At generator circuit breaker (if newly installed):
"CB GEN." (50 AMP)."

8. At fuel filler caps:
"Fuel 96 U.S. Gal. Min. Octane 100/130. Aviation Gasoline Fuel Tanks are interconnected. Allow sufficient time for fuel level to equalize before top-off of tank. No Aromatic Fuel." (See NOTE 9)

9. On inside of oil tank filler door:
"Oil Grade - Aero Shell or equivalent Above 32^{O}F 120: Below 32^{O}F 100
NOTE: Detergent oil W120 and W100 may be used after a 50 hour break-in period on new piston rings. New rings must be seated on non detergent oil. Capacity 13 gallons:. (See NOTE 16)

10. If not already installed on instrument panel, at Stall Warning Light and fuse (1 AMP):
"STALL WARNING"

11. With H.S. 43D50/6933A-9 propeller only. Adjacent to the tachometer:
"AVOID CONTINUOUS GROUND OPERATION BETWEEN 1200 AND 1500 RPM AND BETWEEN 1900 AND 2200 RPM"

12. For dual cockpit aircraft, in rear passenger/cargoarea:
"PASSENGER OR CARGO 200 LBS. MAXIMUM"

Also see the FAA approved Airplane Flight Manual for required placards. (Not applicable to early Model 600 S2D and S2R which were not equipped with Airplane Flight Manuals.)

NOTE 3: Model 600 S2D is eligible for day and night VFR conditions with approved light system, Snow Dwg. No. 90119 and 90132, in which case placard under NOTE 2(d)(2) applies.

NOTE 4: Refer to Type Certificate Data Sheet Number A3SW for conditions and limitations applicable to the "Normal Category", Models 600 S2D, S-2R, S2R-T34, S2R-T15, S2R-T11, S2R-R3S, and S2R-R1340.

NOTE 5. Model S2R, Optional Engine Installation
(Only sections different from II are shown.)

Engine: Wright R-1300-1B

Fuel: 100/130 Minimum grade aviation gasoline

Engine Limits

	H.P.	R.P.M.	M.P. IN. H.G.	ALT.
Takeoff (1 min.)	800	2600	44.0	S.L.
Takeoff (1 min.)	800	2600	42.5	3500
Max. Continuous	700	2400	39.5	S.L.
Max. Continuous	700	2400	38.0	5000

Propeller and Propeller Limits

Hamilton Standard, constant speed, 3D40 Hub, (as modified by STC SP148NW) EAC-AG100-0S blades.
Diameter 108 5/16 inches maximum, 106 5/16 inches minimum.
Pitch settings, 23^{o} low and 38.0^{o} high at 42 inch station.
Governor, Hamilton Standard 4M-12-5

or

Hamilton Standard, constant speed, 23D40 Hub, 6601A-30S blades.
Diameter 108 inches maximum, 106 inches minimum.
Pitch settings, 24.5^{o} low and 44.5^{o} high at 42 inch station.
Governor, Hamilton Standard 4G-10-5

C.G Range: (+22.5) to (+28.0)

Control Surface Movements

Elevator	Up $27^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
Elevator Tab	Up $8^{o} \pm 1^{o}$	Down $22^{o} \pm 1^{o}$
Rudder	Left $24^{o} \pm 1^{o}$	Right $24^{o} \pm 1^{o}$
Aileron	Up $21^{o} \pm 1^{o}$	Down $17^{o} \pm 1^{o}$
Flaps		Down 26^{o} - 30^{o}

Serial Numbers Eligible: 5000R and subsequent

Certification Basis: CAR 8 effective October 11, 1950, restricted category. Type Certificate A4SW issued November 1, 1965, revised March 21, 1968, to add Model S2R.
Engine installed per STC SA2969WE.

Required Equipment: The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. In addition, the following equipment is required:

(1) 24 volt electrical system, Rockweel Dwg. No. 90326.

Weight and Balance: See NOTE 1

Placards: Remove the following placards previously installed:

(1) "AVOID CONTINUOUS GROUND OPERATION BETWEEN 1280 AND 1900 RPM."

(2) If alternator was installed:
"DO NOT TURN OFF ALTERNATOR IN FLIGHT EXCEPT IN CASE OF EMERGENCY"
"75 AMP MAX." (on left instrument panel)
"C/B - LAT." (on left instrument panel)

(3) At fuel filler caps:
"87 OCTANE"

Add the following placards:

(1) Adjacent to manifold pressure gage:

	H.P.	R.P.M.	M.P. IN. H.G.	ALT.
Takeoff (1 min.)	800	2600	44.0	S.L.
Takeoff (1 min.)	800	2600	42.5	3500
Max. Continuous	700	2400	39.5	S.L.
Max. Continuous	700	2400	38.0	5000

Straight line variation between points given.

"100/130 MINIMUM GRADE AVIATION GASOLINE:

(2) At auxiliary fuel pump/circuit breaker:
"AUXILIARY FUEL PUMP ON/OFF"

(3) At primer switch:
"PRIMER ON/OFF"

(4) At generator circuit breaker:
"CB GEN"

(5) At fuel filler cap:
"100/130 MINIMUM GRADE AVIATION GASOLINE"

(6) At altimeter:
ALTITUDE LOSS IN STALL RECOVERY - 300 FEET"

NOTE 6: These aircraft have demonstrated satisfactory operation in the Restricted Category under the following conditions:

(a) Model S2R (with P & W R-1340 Engine) at 6,900 lbs., Standard Day, 400 ft. Altitude, C.G. Limits of 25.0 to 30.0 inches, Stall Speed 78 mph CAS, Maximum Speed 126 mph CAS.

(b) Model S2R (with Wright R-1300-1B Engine at 7,800 lbs., Standard Day, 1700 ft. Altitude, C.G. Limits of 24.0 to 28.0 inches, Stall Speed 83 mph CAS, Maximum Speed 126 mph CAS.

(c) Model S2R-T34 at 8,500 lbs., 2500 Altitude, Outside Air Temperature 45 ^{O}F, C.G. Limits of 30.0 inches, Stall Speed 78 mph CAS with 15^{O} Flaps, Maximum Speed 126 mph CAS.

(d) Model S2R-T15 at 8000 lbs., 3000 ft. Altitude, Outside Air Temperature 65^{O}F, C.G. Limits of 30.0 inches, Stall Speed 76 mph CAS, with 15^{O} Flaps, Maximum Speed 126 mph CAS.

(e) Model S2R-T34 at 9,500 lbs., sea level to 12000 ft. Altitude, Outside Air Temperature to Standard plus 41 ^{O}F, C.G. Limits to 29.0 inches, Stall Speed 80 mph CAS with 15^{O} Flaps, Maximum Speed 126 mph CAS.

While items (a) through (e) have been satisfactorily demonstrated, all parts of CAR 3 have not necessarily been complied with for restricted catefory operations at the increased weights. Also additional operating instructions may need to be established for individual restricted operation approvals under FAR 21.25.

NOTE 7: The following models and serial numbers have been or are currently produced by the Ayres Corporation (originally Rockwell) at its Albany, Georgia, facility:

1. Model S2R (600 HP), S/N 1526 and up
2. Model S2R (800 HP), S/N 5000 and up
3. Model S2R-T34, S/N 6000 and up, T34-001 and up
4. Model S2R-T15, S/N T15-001 and up
5. Model S2R-R3S, S/N R3S-001 and up, R3S-009DC and up
6. Model S2R-T11, S/N T11-001 and up
7. Model S2R-R1340, S/N R1340-001DC and up, S/N R1340-011 and up
8. Model S2R-R1820, S/N R1820-001DC and up, R1820-033 and up
9. Model S2R-T65, S/N T65-001DC and up
10. Model S2RHG-T65, S/N T65-002DC and up
11. Model S2R-T45, S/N T45-001DC and up, T45-001 and up
12. Model S2R-G6, S/N G6-101 and up, G6-101DC and up

13. Model S2R-G10, S/N G10-101 and up, G10-106DC and up
14. Model S2R-G5, S/N G5-101 and up, G5-105DC and up
15. Model S2R-G1, S/N G1-101 and up
16. Model S2RHG-T34, S/N T34HG-101DC and up
17. Model S2R-T660, S/N T660-101 and up.

NOTE 8: For Models S2R-R3S, S2R-T34, S2R-T15, S2R-T11, S2R-G6, S2R-G10, and S2R-G5 with the serial number suffixed with "DC" (Dual Cockpit), the following data apply. All other data listed for these models remain unchanged.

Model S2R-R3S Dual Cockpit

C.G. Range	Forward limit at 6000 lbs. is 22.5 inches Aft of Datum. Aft limits at 6000 lbs. are 27.5 inches Aft of Datum without P/N 19661-1 (elevator down spring) installed. 30.0 inches Aft of Datum with P/N 19661-1 (elevator down spring) installed.
Number of Seats	1 (+89) 1 (+127 Forward Facing) or (+111 Aft Facing)
Maximum Cargo Load	See weight and balance data. Maximum baggage compartment, 200 lbs. (+120). Maximum hopper load, 3336 lbs. (+29.9).
Control Surface Movements	Flaps Down $15^o \pm 1^o$
Serial Numbers Eligible	R3S-009DC and subsequent.

Model S2R-T34 Dual Cockpit

C.G. Range	(+22.5) to (+27.5) without P/N 19661-1 (elevator down spring) installed. (+22.5) to (+30.0) with P/N 19661-1 (elevator down spring) installed.
Number of Seats	1 (+89) 1 (+127 Forward Facing) or (+111 Aft Facing)
Maximum Cargo Load	Passenger/Cargo compartment, 200 lbs. (+120). Maximum hopper load, 3336 lbs. (+29.9). (See NOTE 10.)
Control Surface Movements	Elevator Tab $8^o \pm 1^o$ up; $22^o \pm 1^o$ down
Serial Numbers Eligible	T34-033DC and subsequent.

Model S2R-T15 Dual Cockpit
Same as S2R-T34 Dual Cockpit

Serial Numbers Eligible	T15-010DC and subsequent

Model S2R-T11 Dual Cockpit
Same as S2R-T34 Dual Cockpit

Serial Numbers Eligible	T11-004DC and subsequent

Model S2R-G6 Dual Cockpit

Number of Seats	1 (+89) 1 (+127)
Maximum Cargo Load	See weight and balance data. Passenger/cargo compartment, 200 lbs. (+120.0)
Serial Numbers Eligible	G6-101DC and subsequent.

Model S2R-G10 Dual Cockpit.

Number of Seats	1 (+89) 1 (+127)
Maximum Cargo Load	See weight and balance data. Passenger/cargo compartment, 200 lbs. (+120.0)
Serial Numbers Eligible	G10-106DC and subsequent.

Model S2R-G5 Dual Cockpit.

Number of seats	1 (+89) 1 (+127)
Maximum Cargo Load	See weight and balance data. Passenger/cargo compartment, 200 lbs. (+120.0)
Serial Numbers Eligible	G5-105DC and subsequent.

NOTE 9. The following table summarizes increased fuel capacity limits for the models and serial numbers listed:

Configuration* Model	A. S/N	B. S/N
S2R	2564R-4999R	2577R-4999R
S2R-R3S	N/A	N/A
S2R-R1340	R1340-006 and up	R1340-010 and up
S2R-T34	T34-034 and up	T34-080 and up
S2R-T15	T15-010 and up	T15-021 and up
S2R-T11	T11-004 and up	T11-004 and up
S2R-R1820	R1820-001 and up	R1820-032 and up

*Configuration:

A. Eligible for optional installation
-190 gallons usable, one 96 gallon tank in each wing, tanks interconnected; standard on S2R-R1820.

B. Eligible for optional installation
-228 gallons usable, one 115 gallon tank in each wing, tanks interconnected.

NOTE 10. The following table summarizes models and serial numbers eligible for increased limits - Restricted Category operation only. The certificated maximum take-off gross weight of 6000 pounds applies to these models and serial numbers.

Hopper Load Limit 4000 lbs.

Model	S/N
S2R-T34	T34-082 and up
S2R-T15	T15-020 and up
S2R-T11	T11-006 and up
S2R-R1820	R1820-033 and up

NOTE 11. Use of the Ayres P/N 20500 and 20511 (optional) wing tip extension is limited to Restricted Category operation only. It applies to all S2R Models listed in Type Certificate Data Sheet No. A4SW with the exception of Models S2RHG-T65 and S2R-T660.

NOTE 12. The United Aircraft of Canada PT6A-34 engine is approved as an optional engine on Model S2R-T34, S/N T34-084 and up, and Model S2RHG-T34, S/N T34HG-101 and up, when installed in accordance with Ayres Dwg. 19870 with the following additions:

A. Bleed Air Case Assy. P/N 3029769; Ref. Pratt & Whitney Service Bulletins 1278 & 1279.

B. P-3 Air Filter Installation, Ref. Pratt & Whitney Service Bulletins 1253 & 3106.

C. Replacement of Compressor Delivery Heated Air Tube by a non-metallic hose, P/N 3026687; Ref. Pratt & Whitney Service Bulletin 1315.

Due to the anticipated operating environment, servicing and overhaul interval shall be in accordance with Pratt & Whitney's recommendations for the PT6A-34AG engine.

NOTE 13. The following table summarizes models and serial numbers eligible for Ayres P/N 40220 metal tail as an optional installation**:

Model	S/N
S2R	1416R and up
S2R-R1340	R1340-001 and up*
S2R-R1820	R1820-001 and up*
S2R-T34	6001-6049, T34-001 and up*, T41-001 and up*,
S2R-T15	T15-001 and up*, T27-001 and up*
S2R-T11	T11-001 and up*
S2R-T65	T65-001DC and up
S2R-T45	T45-001DC and up

*S/N with or without DC suffix

**Models S2RHG-T65, S2R-G6, S2R-G10, S2R-G5, and S2RHG-T34 are eligible for the metal tail only.

Control surface movements (rudder only) for all metal tail installations are the same as for the Model S2R-R1820 except on Models S2R-G6, S2R-G10, S2R-G5, S2R-G1, S2R-T45 (single place model only), and S2R-T660. For these models, rudder travel was changed to $19^{o} \pm 1^{o}$.

NOTE 14. Models S2R-T34 and S2RHG-T34, Optional Engine Installation
(Only sections different from Sections III and XVI are shown.)

Engine United Aircraft of Canada PT6A-41AG, PT6A-41, or PT6A-42

Due to the anticipated operating environment, servicing and overhaul interval shall be in accordance with Pratt & Whitney's recommendations for the PT6A-41AG engine for the PT6A-41, PT6A-41AG, and PT6A-42 engines.

Fuel

PT6A-41AG same requirements as Section III.
PT6A-41 and PT6A-42 same requirements as Section III except use of Automotive Diesel Number 1D and 2D is prohibited.

Engine Limits for PT6A-41AG, PT6A-41, and PT6A-42:

	Takeoff and Max. Cont.	Transient Start/Accel.	Reverse	Idle
SHP	750		750	
Torque (PSI)	64.5	68.4 Trans	64.5	
ITT (^{O}C)	750	850	750	660
Ng (%)	101.5	102.6	101.5	
Np (RPM)	2000	2200	2000	
Oil Press (PSIG)	105 to 135		105 to 135	60 min.
Oil Temp (^{O}C)	10 to 99	0 to 99.	0 to 99	-40 to 99

Number of Seats

1 (+89) for S/N's without DC suffix; 1 (+89) and 1 (+127) for S/N's with DC suffix.

Serial Numbers Eligible

6000-6049, T41-089 and up

Placards

Located adjacent to the torque meter:
"Maximum Torque is 64.5 PSI at 2000 RPM"

NOTE 15.

Model S2R-R1340, Optional Cockpit Configuration
(Only sections different from VII are shown.)

Number of Seats

1 (+89)

Maximum Cargo Load

Maximum baggage compartment, 60 lbs. (+112)

Serial Numbers Eligible

R1340-011 and subsequent

NOTE 16.

Model S2R-R1820 Optional Cockpit Configuration
(Only sections different from VII are shown.)

Number of Seats

1 (+89)

Maximum Cargo Load

Maximum baggage compartment, 60 lbs. (+112)

Oil Capacity

18 gallons at Station (-12)

Serial Numbers Eligible

R1820-033 and subsequent

C.G. Range

(+23.0) to (+27.5) without P/N 19661 Elevator Down Spring Assy. Installed
(+23.0) to (+30.0) with P/N 19661 Elevator Down Spring Assy. Installed

NOTE 17.

Any one of the following agricultural dispersal systems may be installed on Models S2R-T34, S2R-T15, S2R-R3S, S2R-T11, S2R-R1340, S2R-R1820, S2R-T65, S2RHG-T65, S2R-T45, S2R-G6, S2R-G10, S2R-G5, S2R-G1 and S2RHG-T34 all serial numbers:

(a) Micronair Spray System, Aero Commander Dwg. No. 80870.

(b) Boommaster Installation, Aero Commander Dwg. No. 80931.

(c) Standard Spray System, Rockwell Dwg. No. 81071.

(d) Spreader and Spreader Quick-Disconnect Installation, Rockwell Dwg. No. 80975.

(e) Spray System Installation, Rockwell Dwg. No. 80854.

(f) Fire Bomber System Installation, Rockwell Dwg. No. 81069.

(g) Spreader and Calibration Installation, Aero Commander Dwg. No. 80674.

NOTE 18. For Models S2R-T34, S2R-T15 and S2R-T11 equipped with optional Air Inlet Barrier Filter, P/N 21402, refer to the Airplane Flight Manual Supplement approved February 4, 1991, or later approved revision, for limitations and procedures.

NOTE 19. External pitot type engine air inlet, P/N's 21900-1 and 21900-21, or screened fairing panel, P/N 21922, are approved optional equipment on the following models:

Model	S/N
S2R-T34	T34-150 and up
S2R-T15	T15-028 and up
S2R-T11	T11-006 and up

NOTE 20. Model S2R, S/N 2584R and subsequent (Diet Thrush)
The following major components have been reduced in weight and structural strength:

ASSEMBLY	PART NUMBER
Wings	20209-600 L/R
Fuselage	10601-600
Horizontal Stabilizer	40087-100

These components are identified at the time of manufacture with the part numbers listed above. This weight and strength reduction effectively reverts these assemblies to their 1977 capabilities. Ayres Corporation will use these components only on Ayres models with a hopper capacity of 400 gallons or less and with engines that are rated at no more than 680 SHP.

NOTE 21. Model S2R-T45, Optional Cockpit Configuration.
(Only sections different from XI are shown)

Number of Seats 1 (+89)

Maximum Cargo Load See weight and balance data.
Maximum baggage compartment 60 lbs. (+112).

Control Surface Movements Rudder, Left 19° ± 1° Right 19° ±1°

Serial Numbers Eligible T45-001 and subsequent.

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